

APPENDIX D

Storage Equipment Characteristics

Section I

3,000-Gallon Onion Tank**CHARACTERISTICS AND FEATURES**

The 3,000-gallon onion tank is a highly mobile, easily transportable, manually inflatable, collapsible fabric water tank. The tank is 23 by 28 by 42 inches and weighs 130 pounds packaged. The tank is 56 by 148 by 94 inches and weighs 24,020 pounds filled with water (Figure D-1, page D-2).

MAJOR COMPONENTS

The 3,000-gallon onion tank consists of 12 major components. They are described below.

Filler Fitting

This fitting provides the means to fill the water tank. Also use this 2-inch female fitting to remove water from the tank. Access it by removing the dust plug which is held in place by two cam-lever arms.

Discharge Fitting

This fitting provides the means of removing water from the tank. Also use this 2-inch male fitting to fill the tank. Access it by removing the dust cap which is held in place by two cam-lever arms.

Automotive Valve

This valve provides an attachment point for a standard, automotive-type pump to inflate the tank collar. Access it by removing the valve cap.

Inflation Valves

There are four inflation valves: three in the tank collar and one in the cover float. The inflation valves provide an attachment point for the foot bellows to inflate the tank collar and cover float. During use, the inflation valve is turned to the Open position for inflating and deflating and to the Close position for holding air after inflation.

Positions are stenciled on the tank collar and cover float.

Tank Collar

The tank collar is inflated before filling the tank. This allows the collar and tank to rise with the rising water level.

Cover Float

The inflatable float is an integral part of the cover. The float is inflated prior to installing the cover over the tank and acts to support the cover.

Handle-Toggles

Ten handle-toggles are installed around the outside of the tank. They provide the attachment points for the 10 cover handles used to secure the cover to the tank and to serve as lifting points for moving the empty tank.

Cover

The cover serves a dual purpose. When the tank is in use, install the cover over the top to prevent contamination of the drinking water. When the tank is not in use, the cover serves as the valise. The cover provides 10 handles around the outer edges which attach to the 10 handle-toggles for securing the cover to the tank.

Foot Bellows

The foot bellows provides the means of inflating the tank collar and cover float. The foot bellows provides an integral hose with a male fitting which threads directly into any of the four inflation valves. The foot bellows is stored in the repair pouch, on the outside of the tank.

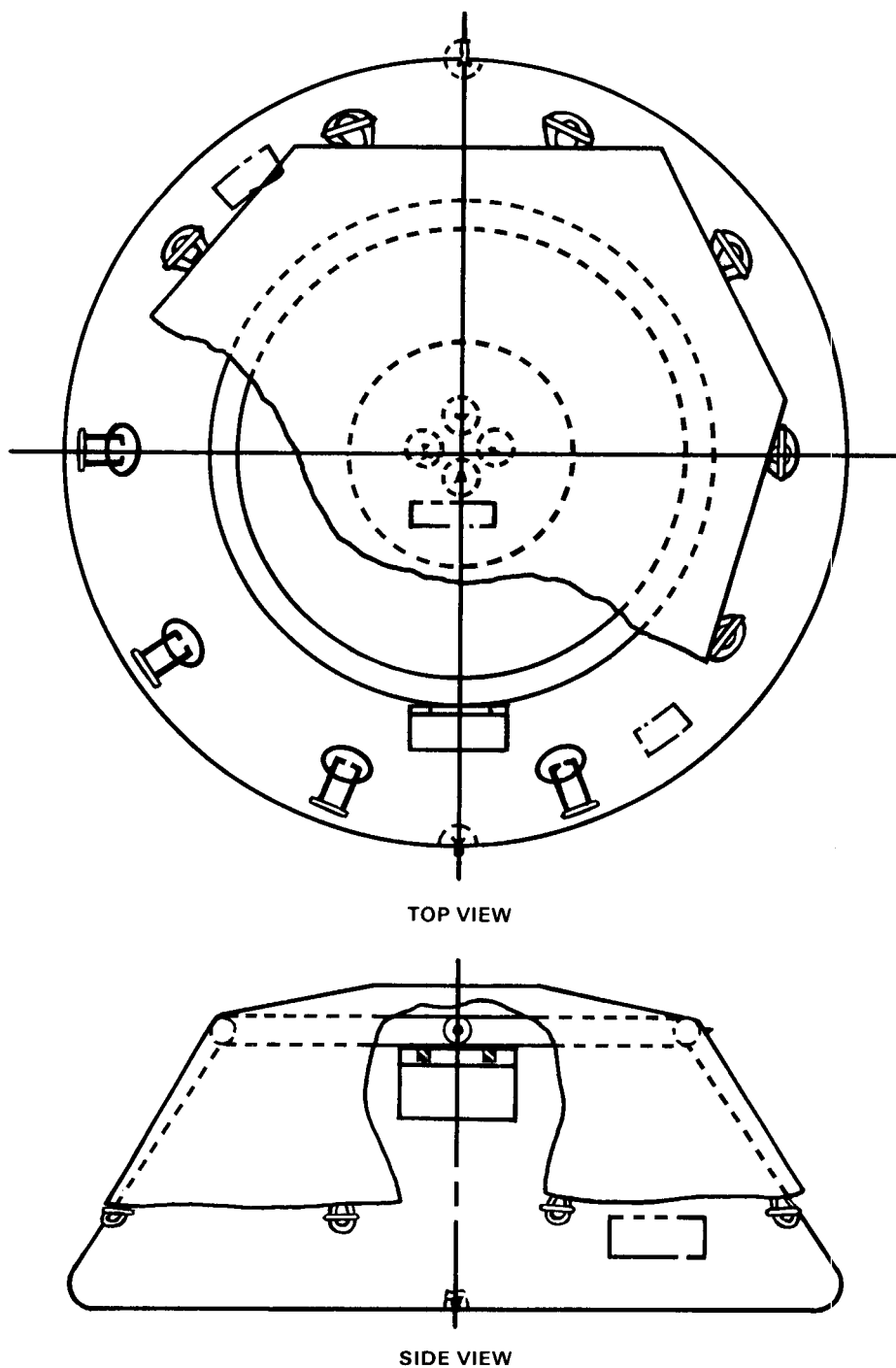


Figure D-1. 3,000-gallon onion tank

Lift Handles

There are two lift handles attached to the inside bottom of the tank. Use the handles for hanging the tank inside out to dry after use.

Repair Pouch

Attach the repair pouch to the outside wall of the tank, and use it to store the hand bellows, repair kit, and TM 5-5430-225-12&P.

Repair Kit

The repair kit contains all the items needed to perform both emergency and permanent repair of cuts and punctures in the tank fabric. Store items

of the repair kit in the repair kit pouch. Also included with the repair kit is a laminated instruction sheet detailing fabric repair procedures.

Section H PWS/DS

THE 40,000-GALLON POTABLE WATER DISTRIBUTION SYSTEM

The PWS/DS is the Army's primary means for the receipt and storage of bulk water and for its issue to combat forces under tactical conditions. This section briefly describes the PWS/DS and its major parts. Chapters 2, 3, and 5 of this manual contain information on site selection, layout, displacement, and operation for this system.

CHARACTERISTICS AND FEATURES

The PWS/DS is intended for use in an arid environment by both DS and GS water units. DS units will be issued the PWS/DS with 20,000-gallon fabric tanks, and GS units will be issued the PWS/DS with 50,000-gallon fabric tanks. The total capacity of each PWS/DS will be dependent on the number and size of fabric tanks assigned and used. Each PWS/DS has the capability of receiving and distributing water to and from both hose line and tank truck. The PWS/DS can issue water to either tank trucks (SMFT), water buffaloes, FAWPSS, or small unit containers, such as 5-gallon cans. When working with this equipment, it is important to remember that the systems are based on a modular concept: that is, any number of tanks may be used on an individual basis, and other tanks may be shut off at either their input or output valves. Likewise, if a section of 20-foot hose is specified for use in a particular application but the hose is found to have a hole or a leak, take two 10-foot lengths from the overpack kit, couple together, and use in its place.

MAJOR COMPONENTS

Pumps, connection kits, loading stations, hypochlorinators, and a collapsible fabric tank are

major components of the PWS/DS. They are described in the following paragraphs.

Pumps

Both the 125- and 350-GPM pumps are used in the system. The 350-GPM pump and diesel engine are trailer-mounted, the 125-GPM pump and diesel engine are skid-mounted. Use the 350-GPM pump to fill the collapsible fabric bags. Use a 350-GPM pump in parallel with an auxiliary 125-GPM pump to supply potable water from the bags to the water distribution points.

The 126-GPM pump. The 125-GPM pump (Figure D-2, page D-4) is a skid-mounted, self-priming centrifugal type water pump rated at 125 GPM at 50 feet head. It is powered by a one-cylinder, air-cooled diesel rated at 6 HP at 3,600 RPM. The dimensions are 19 by 22 by 26 inches, and it weighs 175 pounds. Fuel is supplied by an internal 1-gallon tank. Engine oil capacity is 1.1 quarts.

The 360-GPM pump. The 350-GPM pump (Figure D-3, page D-5) consists of an air-cooled, three-cylinder diesel engine and self-priming centrifugal pump mounted on a two-wheel frame assembly. The pumping assembly incorporates its own control panel and suction and discharge valves. These components are also mounted on the frame assembly. The single stage, centrifugal flow, variable displacement pump is rated at 350 GPM at 250 feet head. It has a working pressure of 125 psi and a suction pressure of 20 psi. The three-cylinder, 172-cubic-inch diesel is rated at 44 HP at 2,500 RPM and weighs 595 pounds. An internal 19-gallon fuel tank supplies fuel to the

diesel. Engine oil capacity is 2 gallons. The dimensions of the unit are 122 by 78 by 68 inches, and it weighs 2,140 pounds. Maximum towing speeds are 20 MPH on hard surfaces, 10 MPH on gravel roads, and 8 MPH cross country.

Connection Kits

There are a variety of connection kits with each PWS/DS. Use these kits to connect the 125-GPM and 350-GPM pumps to the receiving or distribution side of the fabric bags of the tank farm. Use

2-inch gate valves, 4-inch gate valves, 4-inch butterfly valves, and 4-inch quick-acting valves to control the flow of water through the PWS/DS. The 4-inch valves control the flow to and through the fabric bags and the 350-GPM pumps. Use these larger valves to isolate the bags or the 350-GPM pump. Use the 2-inch valves to control the flow of water at the distribution points. Suction or discharge hoses are either 4 inches or 2 inches and come in 10- and 20-foot lengths. The 1 1/2-inch discharge hose is 25 feet long.

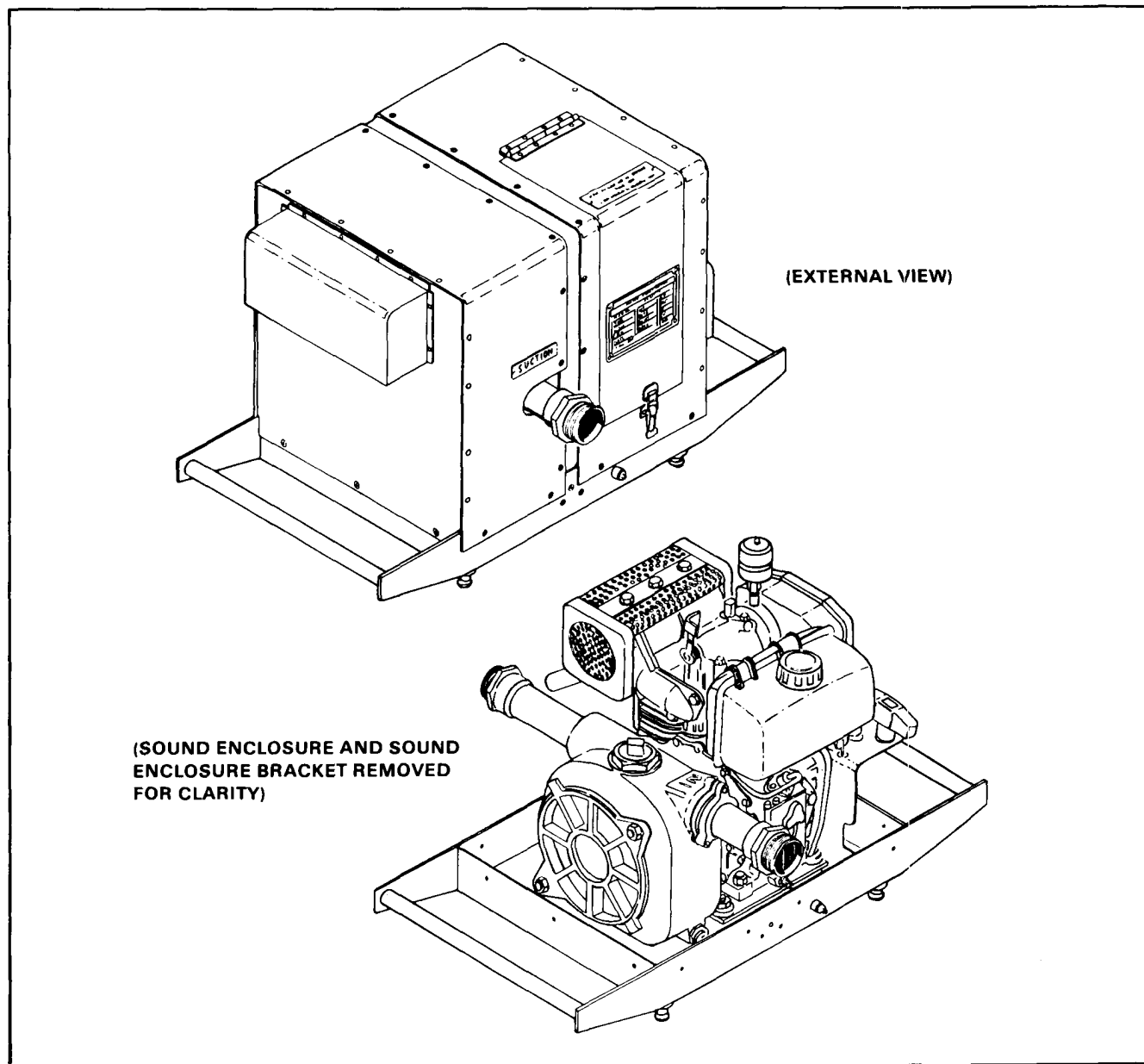


Figure D-2. 125-GPM pump

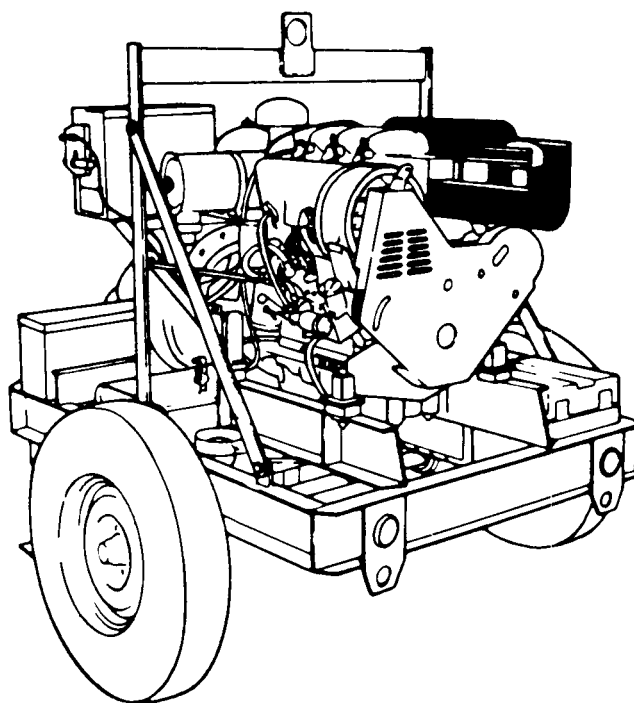
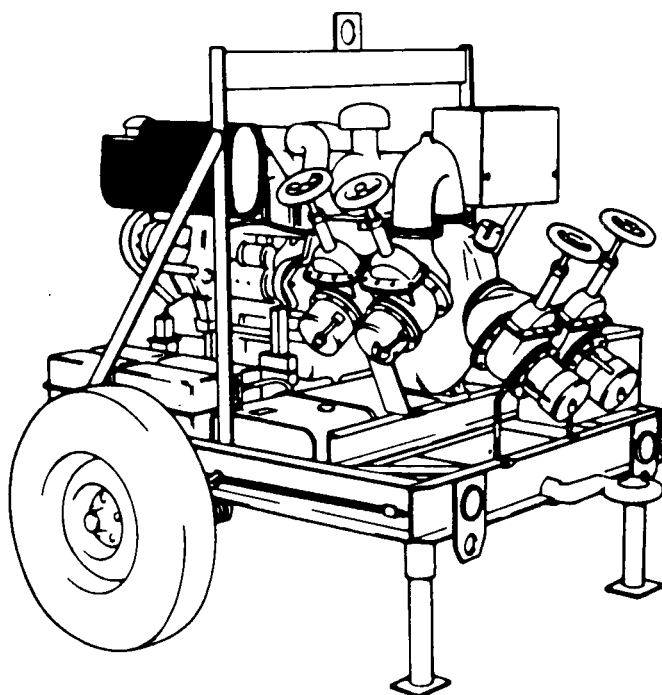


Figure D-3. 350-GPM pump

Loading Stations

Four types of loading stations are provided for dispensing water. Two loading stations are provided to dispense water through 20-foot, 4-inch diameter hoses for filling SMFTs. Use gate valves to control water flow through these hoses. Four loading stations are provided to dispense water through 20-foot, 2-inch diameter hoses for filling water trailers. Use gate valves to control water flow through these hoses. Four water dispensing stations are provided to deliver water through hand-held nozzles, and three drum-filler stations are provided to deliver water to the FAWPSS through a 1 1/2-inch diameter hose.

Hypochlorinator

You need two hypochlorinators to operate the PWS/DS. Place one hypochlorinator unit

(Figure D-4, page D-6) in the line between the 350-GPM pump and the water loading stations and the other on the inlet to the tanks. A proportionate amount of water delivered by the pump flows through the hypochlorinator where a solution of liquid chlorine is added to the mainstream flow. Water flowing through the line bypassing the hypochlorinator is metered to maintain the correct flow through the unit. Placed in a water line, the hypochlorinator will chlorinate the water flowing through the line for a minimum of two hours before requiring operator adjustment (resupply of chlorine solution). The portable frame-mounted hypochlorinator uses the mainstream water pressure as its power source. It is 33 by 26 by 28 inches and weighs 235 pounds. The chlorine reservoir solution tank holds 6 gallons of solution.

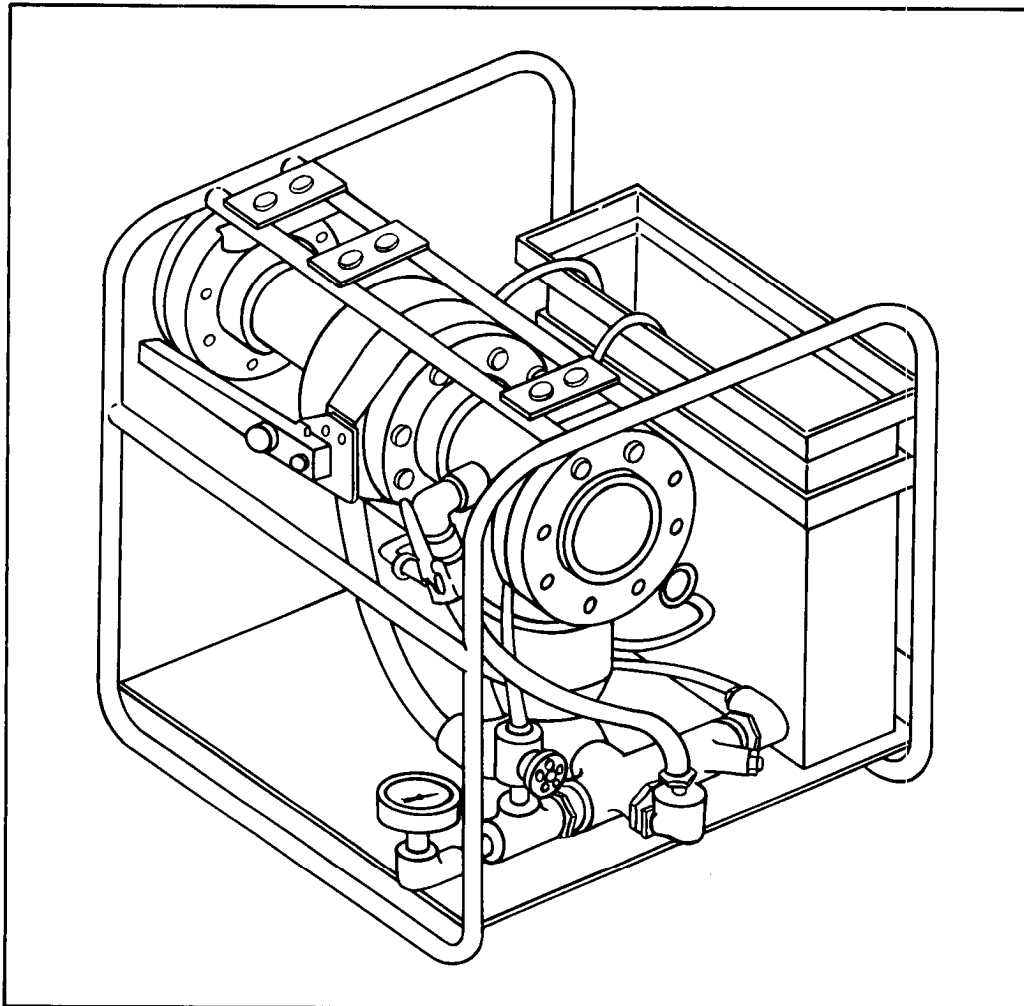


Figure D-4. Hypochlorinator

Collapsible Fabric Tank (20K and 50K)

The water tank stores the potable water. The unit consists of the collapsible tank constructed of one-ply nylon fabric impregnated with chlorobutyl, vent and drain assemblies, and a 1/2-inch drain hose and control valve assembly (Figure D-5, page D-7). When filled, the tank assumes a pillow shape. Do not overfill the tank as it may burst. Do not use the tank on steeply sloping ground or it may roll. The maximum slope of the ground must not exceed 3 inches per 100 feet. Handles are provided along all sides of the tank for moving and positioning while empty. Pump water into the tank at 350 GPM until the tank is 90 percent filled; at that time, reduce the flow to

100 GPM. When not in use, fold the tank or roll and store it in the shipping container. Use a repair kit included with each tank to temporarily seal punctures or tears in the tank while it is full. Use a vulcanized rubber patch to permanently repair the tank when it is removed from service.

The 20,000-gallon tank. The 20K tank is 28 by 24 feet dry and 27 by 23 by 5.5 feet filled; it weighs 460 pounds dry and 166,800 pounds filled.

The 50,000-gallon tank. The 50K tank is 65 by 25 feet dry and 23 by 63 by 5.75 feet filled; it weighs 1,560 pounds dry and 418,560 pounds filled.

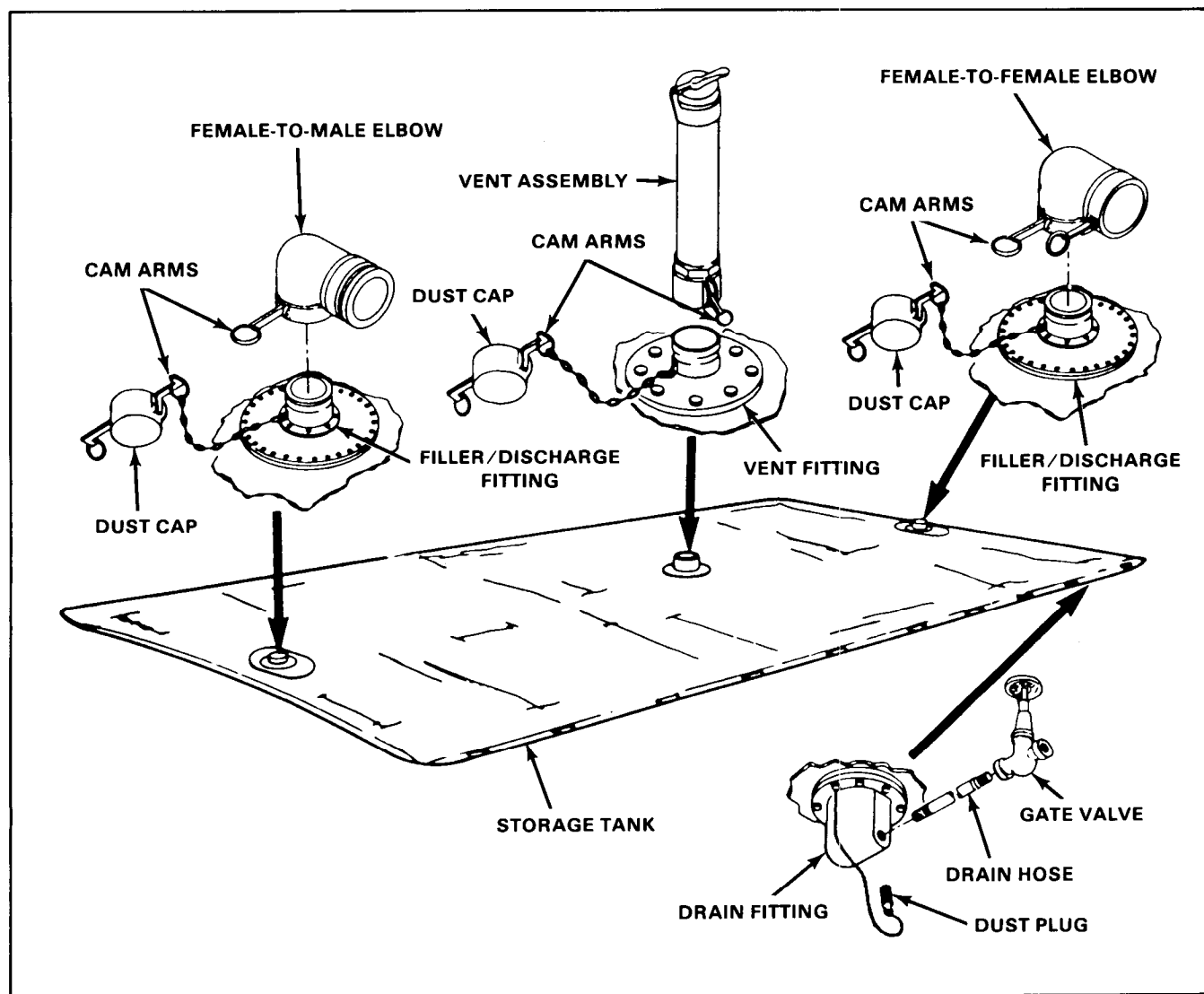


Figure D-5. Collapsible fabric tank and assemblies